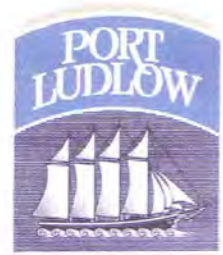


December 24, 2011

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Development Review Division
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Subject: Land Use Application and Pending SEPA Determination
MLA 10-00072-Iron Mountain Quarry

This letter is in response to the subject Land Use Application and pending SEPA determination by Jefferson County on MLA 10-00072. This letter addresses the traffic impact determination for SR 104 that was made as a part of the application. Iron Mountain Quarry (IMQ) submitted a traffic impact study as a part of its application for mining operations. This traffic impact study was conducted by Transportation Solutions, Inc. (TSI) in a study titled "Iron Mountain Quarry Traffic Impact Analysis" with the latest report dated July 2011.

Summary

The TSI report contains many erroneous assumptions and calculations that lead to a serious underestimation of the truck traffic onto SR 104 by a factor of at least three (3). The net effect of this erroneous analysis is a serious understatement of the SR 104 mitigation and will expose the residents of Jefferson and Clallum County and traveling public to unacceptable risk of serious injury or death. Once serious accidents occur on SR 104 due to increased truck traffic, WSDOT will most likely implement highway changes that will be paid by the taxpayers and by Jefferson County. The errors in the TSI traffic impact study must be corrected before the issuance of a determination. The study errors are contained in the following sections of this letter.

Yearly Quarry Production

Year	Tons
2003	257,560
2004	322,792
2005	384,015
2006	414,102
2007	368,208
2008	256,756
2009	156,700
2010	151,600

The subject application and pending SEPA determination both state that annual production at the proposed quarry could produce as much as 400,000 tons per year. This number is consistent with the annual production at the Shine Quarry site before the recession. We obtained the annual production numbers from Shine Quarry for the period of 2003 through 2010. These numbers are shown in the Table 1.

In spite of the subject application and pending determination stating that production could be at 400,000 tons per year and Shine Quarry data before the recession indicating similar production numbers, TSI has elected to use an annual production rate of 160,000 tons per year for their traffic study. They indicate that production may reach 290,000 tons per year in the next 20 years after initiation of mining operations. As noted in the Table 1, the 160,000 tons per year production number is representation of Shine Quarry production during the recession and the production will surely return to pre-recession levels in a few years.

The use of erroneous production numbers for the proposed quarry by themselves understate the number of trucks entering and exiting SR 104 from the intersection of Shine Quarry Road and SR 104 by at least a factor of two and one-half (2.5). We simply do not understand why Jefferson County has allowed Iron Mountain Quarry to use extremely low production numbers for their traffic impact analysis when all documentation states that the production will be significantly higher.

Additionally, TSI, in their report, stated that they used production rates for both the new IMQ Quarry and the existing Shine Quarry in their analysis for conservatism. They did no such analysis nor did they do any traffic analysis for a 290,000 ton annual production rate.

Truck Mix

Table 2 Shine Historical vs TSI Assumed			
	Truck Profile		
Truck	Tons/Load	TSI	Shine
Tandem Unit	30	75	60
Single Dump	13	20	25
Single Unit	7	5	15
Avg Truck/Ton		0.0475	0.0607
Monthly Tonnage	Trucks Required		
	TSI	Shine	Understated
10000	475	607	131
20000	951	1213	263
30000	1426	1820	394
40000	1901	2426	525
50000	2376	3033	657
60000	2852	3640	788

A second major factor in determining the amount of truck traffic, that can be expected at the quarry, is the mix of trucks used in transporting of the materials. TSI, in their report, uses a mix of 75% tandem trucks, 20% dump trucks, and 5% other trucks. The tonnage carried by each is 30, 13, and 7 respectively. Given a daily production, the number and mix of trucks can be calculated. Experience of Shine Quarry indicates that a different mix of trucks may be

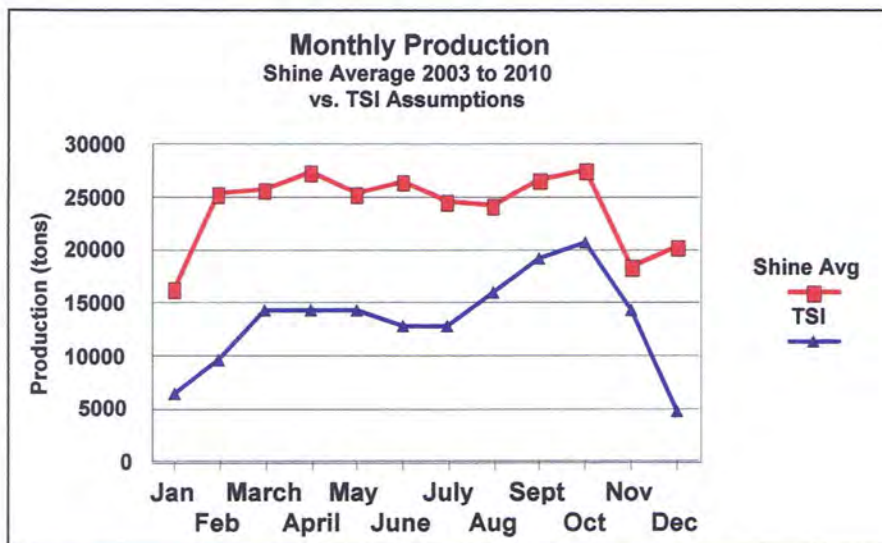
expected. The Shine Quarry experience is shown in Table 2 and consists of 60% tandem trucks, 25% single trucks and 15% other trucks. If one uses the Shine Quarry experience and truck mix then TSI understates the number of trucks by 27%.

Additionally, Appendix F of the TSI report contains the truck traffic calculations based on their assumptions of truck mix. Those calculations are in error!! The TSI analysis used a constant of 25.45 tons/truck whereas the correct factor should be average trucks per ton. The TSI calculation understates the number of trucks by 27.7%. The combination of the assumed truck mix and the computational error results in the understating the truck traffic by 54% as shown in Table 3.

Truck	Tons/Load	Truck Profile	
		TSI	Shine
Tandem Unit	30	75	60
Single Dump	13	20	25
Single Unit	7	5	15
Avg Truck/Ton		0.0475	0.0607
Monthly Tonnage	Trucks Required		
	TSI (25.4)	Shine	Understated
10000	394	607	213
20000	787	1213	426
30000	1181	1820	639
40000	1575	2426	852
50000	1969	3033	1064
60000	2362	3640	1277

Monthly Tonnage

Figure 1

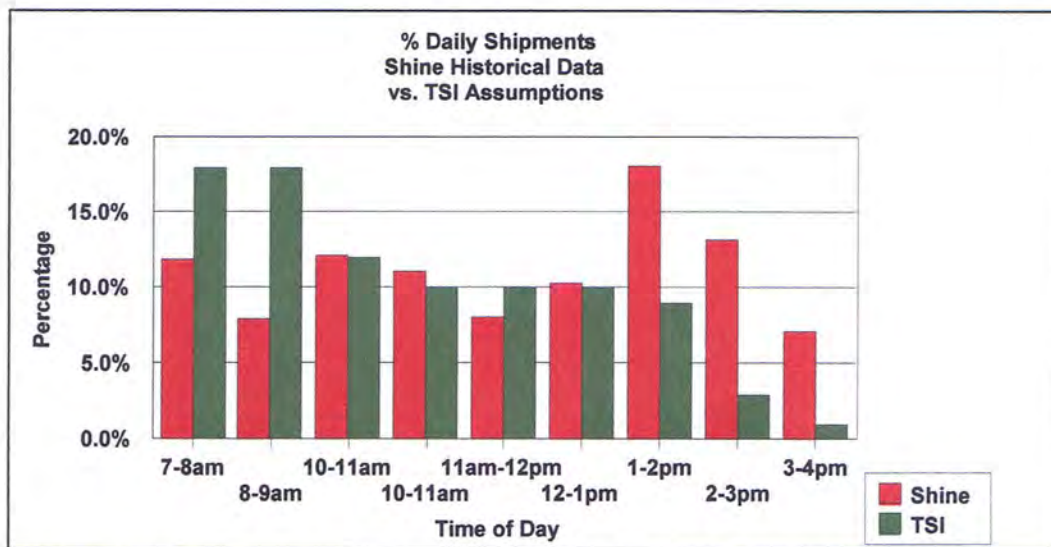


TSI in their traffic impact study uses monthly production rates that vary by month as shown in Figure 1. As noted the monthly production rates average less than 15,000 tons in spring and summer, peak to 20,000 tons in October and then drop off in the winter. These numbers are significantly lower than the experience of Shine Quarry. The experience at Shine

Quarry is that production averages around 27,000 tons during most of the year. Additionally, the subject documents indicate that the monthly tonnage during the summer could range from 26,000 to 52,000 tons. Thus, it would appear that TSI is grossly understating the monthly tonnage to be expected from production at the quarry especially during the summer when traffic on SR 104 is highest.

Daily Quarry Shipments

The TSI report assumes that 75% of daily production will occur before noon. That assumption is in total conflict with the Shine Quarry experience which indicates that truck traffic is fairly even throughout the day. The Shine data and that being used by TSI is compared in Figure 2.



The Shine data indicates that the split is 50-50 between morning and afternoon shipments. If there is a peak in the traffic, it occurs between 1 and 2 PM and that is what should be used for the peak traffic analysis.

Traffic Assumptions

The TSI report bases all of their daily traffic assumptions on measurements made by them during a one week period from May 26, 2011 through June 1, 2011. Based in large part on these measurements, peak daily traffic on SR 104 past the Shine Quarry Road is calculated. The Washington State Department of Transportation (WSDOT) has a much more extensive data base on traffic crossing the Hood Canal. TSI has failed to utilize this data base which would result in a more accurate estimate of the amount of traffic that the trucks will experience on SR 104.

The TSI report indicates that most of the daily production occurs in the morning and calculates the peak daily traffic in the morning occurring in July at an AM

peak of 877 cars. This analysis is in opposition to that used by WSDOT who calculate the peak daily traffic as being 10% of the annual daily traffic. For reference, the average annual daily traffic at the intersection of Shine Quarry Road and SR 104 is 12,969. Using the WSDOT calculation methodology, the peak daily traffic would be 1297 or an increase of almost 50% from the number used by TSI in their study.

The TSI study concludes that the level of service at the intersection of Shine Quarry Road and SR 104 would be D or F. That being unacceptable, they conduct a gap analysis from which they conclude that there are sufficient gaps in SR 104 traffic that trucks can safely enter the roadway. However, that conclusion is based on assumptions that we believe will put the traffic on SR 104 at undue risk. First they assume that it is acceptable that trucks entering SR 104 can slow traffic down to 42 miles per hour when the speed limit on SR 104 is 60 miles per hour. Second they assume that a truck can make a left hand turn from Shine Quarry Road onto SR 104 and accelerate to 42 mph in 21 seconds. We believe that both of these assumptions are in error and badly overestimate the number of gaps in traffic that may exist to allow trucks to enter SR 104. We discuss the errors in these assumptions below.

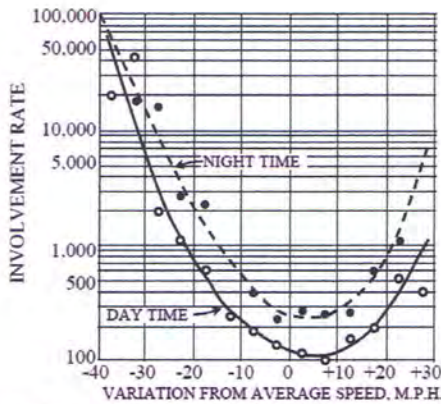


Figure 1 - Relationship between crash involvement rate and variation from average speed (adapted from Solomon, 1964)

Figure 3 from the American Association of State Highway and Transportation Officials (ASSHTO) "A Policy on Geometric Design of Highways and Streets" indicates that the accident rate increases with increasing differential in speeds. It would seem more prudent to require a 10 mph or lower speed differential on entering the highway based on

Figure 3

the data in the figure below. Given that SR 104 has a 60 mph speed limit, then design guidelines should be for a merge speed of not lower than 50 mph not 42 mph used in the TSI analysis. Note in the figure that the involvement rate (i.e., traffic accidents) more than doubles if the allowable speed differential is 18 mph rather than 10 mph.

Data in the TSI report indicates that it takes 12-14 seconds for a tandem truck to fully make a left hand turn. That leaves only about 8 seconds for the truck to accelerate to 42 mph. Our calculations indicate that the truck cannot accelerate to 42 mph in 8 seconds and further if the merge speed is increased to 50 mph then we calculate that the turn time plus acceleration time is approximately 49 seconds.

Finally, TSI ignores the wait time between gaps. Their analysis simply says that when the number of gaps exceed the number of trucks there is no problem. The entire safety issue deals with wait time, which they ignore. If trucks have to wait a long time the driver will get impatient and enter traffic when sufficient time gaps do not exist. The analysis should not just be about gaps but on the time between gaps.

Recommendations

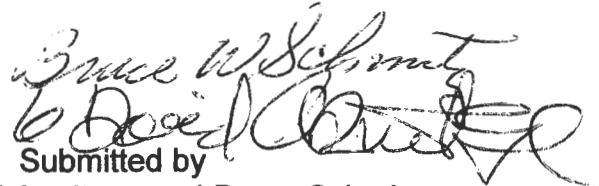
The above discussion indicates that the assumptions used by TSI in their traffic impact study are erroneous and seriously understate, by a factor of at least three (3), the truck traffic expected to enter or exit SR 104 at the intersection of SR 104 and Shine Quarry Road. We believe that Jefferson County, prior to issuing any ruling on the IMQ application, should mandate that IMQ be required to redo their traffic impact study based on assumptions that are consistent with the stated production to be expected at the quarry and using SR 104 traffic data from WSDOT measurements that are consistent with that actually occurring on SR 104. We believe a correct traffic impact study will show that significant SR 104 highway mitigation is necessary before quarry operations may be approved. The cost of this mitigation should be borne entirely by Iron Mountain Quarry and not imposed later on the taxpayers when increased accidents and/or deaths occur on SR 104.

An alternative is to only allow IMQ to have monthly and annual production rates consistent with that assumed in their traffic impact study. That would restrict production significantly from that stated in the subject application and pending SEPA determination. If that alternative was implemented Jefferson County would have to develop procedures to monitor the monthly and annual production rates to assure that they were not exceeded and report such production rates to the public so that we are assured that the production rates are not exceeded.

We request a detailed response to this letter and an indication of action to be taken by Jefferson County prior to the issuance of your SEPA determination on the subject application.



P. A. Traci, President
South Bay Homeowners Assoc.



Submitted by
David Armitage and Bruce Schmitz
SEPA Committee

These comments were prepared by a sub-committee of the SBCA consisting of David Armitage, Dick Grieves, Val Pilmer and Bruce Schmitz

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